
GRAVES COUNTY

(Graves County Water Service Area Map)

- Estimated 1999 population of 35,700--70% on public water
- Estimated 2020 population of 38,400--78% on public water
- 130 miles of water lines, with plans for 100 additional miles
- Estimated funding needs for public water 2000-2005--\$3,581,000
- Estimated funding needs for public water 2006-2020--\$830,100

Graves County had an estimated population of 35,718 (15,257 households) in 1999 with a projected population of 38,371 (16,787 households) in 2020. Nearly 70 percent of the county is served by public water. The remainder of the county relies primarily on private domestic water wells. 1,370 households will be added to public water by line extensions during 2000-2020.

Estimated Costs - Proposed Projects, 2000-2005

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
GRAVES								
WINGO WATER & SEWER DEPARTMENT	3.5	30	92					92
CONSUMER W/D	16.6	201	431	78				509
MAYFIELD ELECTRIC & WATER	0.8	40	21				1,275	1,296
HICKORY W/D	33.7	350	877					877
SYMSONIA W/D	10.0	168	260					260
HARDEMON W/D				122			425	547
TOTAL	64.6	789	1,681	200			1,700	3,581

Estimated Costs - Proposed Projects, 2006-2020

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
GRAVES								
CONSUMER W/D	2.2	50	57					57
MAYFIELD ELECTRIC & WATER	29.8	527	775					775
TOTAL	32.0	577	831					831

PUBLIC WATER SYSTEMS

Graves County is served by 12 community water systems--7 water districts: Fancy Farm, Consumer, Hardeman, Hickory, South Graves, Symsonia, Sedalia; 5 municipal: Mayfield

WATER SERVICE AREAS

GRAVES COUNTY

Kentucky

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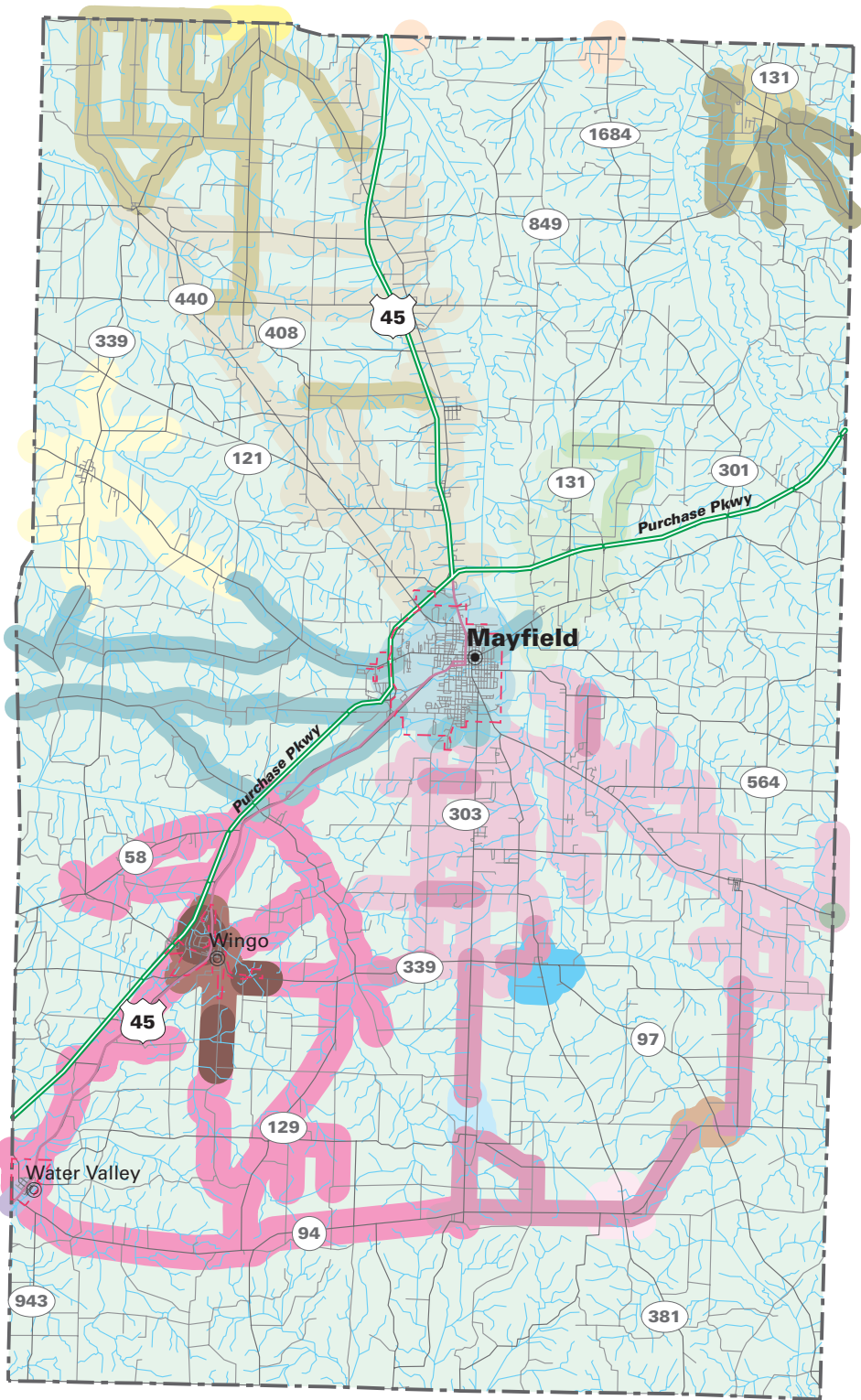
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WATER SERVICE STATUS BY OWNER		
EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		WINGO WATER AND SEWER DEPARTMENT
		TRI CITY WATER WORKS
		SYMSONIA WATER DISTRICT
		SOUTH GRAVES COUNTY WATER DISTRICT
		SEDALIA WATER DISTRICT
		PADUCAH WATER WORKS
		MURRAY WATER SYSTEM
		MAYFIELD ELECTRIC AND WATER SYSTEM
		LYNNVILLE WATER SYSTEM
		HICKORY WATER DISTRICT
		HENDRON WATER DISTRICT
		HARDEMAN WATER DISTRICT
		FULTON MUNICIPAL WATER SYSTEM
		FANCY FARM WATER DISTRICT
		CUBA WATER WORKS
		CONSUMERS WATER DISTRICT

Electric & Water System, Wingo Water & Sewer, Cuba Water Works, Lynville Water System, Tri-City Water Works--and 2 non-community systems.

FANCY FARM WATER DISTRICT

PWSID: 0420027
System Type: COMMUNITY
Owner Type: WATER DISTRICT
Surface Source:
Purchase Source:
Well Source: Yes
Sells Water to: MILBURN WATER DISTRICT
Treatment Plant Capacity (MGD): 0.43
Percent Daily Average Production: 33.00
Total Tank Storage Capacity (gallons): 100,000.00
Total Service Connections: 430.00
Number of Employees: ?? .00
Treatment Operator Class:
Distribution Operator Class: 2BD
Customer Rate for 1,000 Gallons: 4.79
O/M costs 1997: 99,670.00
O/M costs per Service Connection: 201.35
Net Revenue 1997: 19,710.00
Total Water Produced 1997 (gallons): 58,134,000.00
Water Sold 1997 (gallons): 37,190,000.00
Unaccounted-for Water 1997 (%): 36.03

The district currently has 430 customers and withdraws 121,000 gallons per day from two wells. The district sells water to the Milburn Water District. The treatment plant has a 24-hour rated capacity of 432,000 gallons. The plant treats about 100,000 gallons a day. The system has a storage capacity of 400,000 from two tanks.

CONSUMERS WATER DISTRICT

PWSID: 0420084
System Type: COMMUNITY
Owner Type: WATER DISTRICT
Surface Source:
Purchase Source:
Well Source: Yes
Sells Water to:
Treatment Plant Capacity (MGD): 0.56
Percent Daily Average Production: 27.00
Total Tank Storage Capacity (gallons): 250,000.00
Total Service Connections: 1,436.00
Number of Employees: 1.00
Treatment Operator Class:
Distribution Operator Class: 3B
Customer Rate for 1,000 Gallons: 2.22
O/M costs 1997: 158,684.00

O/M costs per Service Connection:.....	110.27
Net Revenue 1997:.....	3,812.00
Total Water Produced 1997 (gallons):.....	0.00
Water Sold 1997 (gallons):.....	88,298,000.00
Unaccounted-for Water 1997 (%):	11.53

The district employs one-fulltime employee and serves 1,436 customers. The district withdraws and treats approximately 258,978 gallons per day from its two wells. The two treatment facilities have a combined capacity of 560,000 gallons per day. The district has a storage capacity of 250,000 gallons.

HARDEMAN WATER DISTRICT

PWSID:.....	0420172
System Type:.....	COMMUNITY
Owner Type:.....	WATER DISTRICT
Surface Source:	
Purchase Source:	
Well Source:	Yes
Sells Water to:	
Treatment Plant Capacity (MGD):.....	0.43
Percent Daily Average Production:	20.00
Total Tank Storage Capacity (gallons):.....	50,000.00
Total Service Connections:	363.00
Number of Employees:.....	??.00
Treatment Operator Class:	
Distribution Operator Class:	2BD
Customer Rate for 1,000 Gallons:.....	3.09
O/M costs 1997:.....	60,711.00
O/M costs per Service Connection:	182.86
Net Revenue 1997:.....	2,231.00
Total Water Produced 1997 (gallons):.....	27,633,000.00
Water Sold 1997 (gallons):.....	25,992,000.00
Unaccounted-for Water 1997 (%):	5.94

The Hardeman Water District serves 363 customers. The district has two wells from which they withdraw 86,000 gallons per day. The treatment plant is designed for 432,000 gallons per day. The district also has a 50,000-gallon water tower.

HICKORY WATER DISTRICT

PWSID:.....	0420194
System Type:.....	COMMUNITY
Owner Type:.....	WATER DISTRICT
Surface Source:	
Purchase Source:	
Well Source:	Yes
Sells Water to:	
Treatment Plant Capacity (MGD):.....	1.00

Percent Daily Average Production:	36.00
Total Tank Storage Capacity (gallons):.....	325,000.00
Total Service Connections:	1,165.00
Number of Employees:.....	??
Treatment Operator Class:.....	2D
Distribution Operator Class:	3B
Customer Rate for 1,000 Gallons:.....	2.30
O/M costs 1997:.....	147,176.00
O/M costs per Service Connection:	121.73
Net Revenue 1997:	19,474.00
Total Water Produced 1997 (gallons):.....	142,916,000.00
Water Sold 1997 (gallons):.....	125,378,400.00
Unaccounted-for Water 1997 (%):	12.27

The district currently serves 1,165 customers. 304,000 gallons per day are withdrawn from three wells. The treatment plant is rated for 1 million gallons a day. The district has a 325,000 gallons. storage capacity. The district spends 83% of revenue on operation and maintenance.

MAYFIELD ELECTRIC AND WATER SYSTEM

PWSID:.....	0420274
System Type:.....	COMMUNITY
Owner Type:.....	MUNICIPAL
Surface Source:	
Purchase Source:	
Well Source:	Yes
Sells Water to:	
Treatment Plant Capacity (MGD):.....	8.00
Percent Daily Average Production:	47.00
Total Tank Storage Capacity (gallons):.....	1,750,000.00
Total Service Connections:	4,976.00
Number of Employees:.....	10.00
Treatment Operator Class:.....	2D
Distribution Operator Class:	4B
Customer Rate for 1,000 Gallons:.....	Not available
O/M costs 1997:.....	Not available
O/M costs per Service Connection:	Not available
Net Revenue 1997:	Not available
Total Water Produced 1997 (gallons):.....	Not available
Water Sold 1997 (gallons):.....	Not available
Unaccounted-for Water 1997 (%):	Not available

The MEWS currently has 4,976 customers and 10 fulltime employees. The MEWS has three wells from which it withdraws approximately 2,250,000 gallons per day. The treatment plant has a 24-hour rated capacity of 8 million gallons, but only processes 1.35 million gallons per day. The MEWS has a storage capacity of 1.75 million gallons from three tanks.

SOUTH GRAVES COUNTY WATER DISTRICT

PWSID: 0420405
System Type: COMMUNITY
Owner Type: WATER DISTRICT
Surface Source:
Purchase Source:
Well Source: Yes
Sells Water to:
Treatment Plant Capacity (MGD): 0.43
Percent Daily Average Production: 43.00
Total Tank Storage Capacity (gallons): 0.00
Total Service Connections: 730.00
Number of Employees: 1.00
Treatment Operator Class:
Distribution Operator Class: 2BD
Customer Rate for 1,000 Gallons: 8.01
O/M costs 1997: 124,300.00
O/M costs per Service Connection: 169.12
Net Revenue 1997: 1,745.00
Total Water Produced 1997 (gallons): 33,547,000.00
Water Sold 1997 (gallons): 29,582,000.00
Unaccounted-for Water 1997 (%): 11.82

The district serves 730 customers and employs 1 fulltime employee. The district has 4 wells in which it withdraws 143,000 daily. The treatment plant is rated for 430,000 gallons per day, and the district has a storage capacity of 250,000 gallons. The system currently spends 56% of revenue on operation and maintenance.

WINGO WATER AND SEWER DEPARTMENT

PWSID: 0420475
System Type: COMMUNITY
Owner Type: MUNICIPAL
Surface Source:
Purchase Source:
Well Source: Yes
Sells Water to:
Treatment Plant Capacity (MGD): 0.72
Percent Daily Average Production: 20.00
Total Tank Storage Capacity (gallons): 175,000.00
Total Service Connections: 320.00
Number of Employees: 4.00
Treatment Operator Class:
Distribution Operator Class: 2BD
Customer Rate for 1,000 Gallons: Not available
O/M costs 1997: Not available
O/M costs per Service Connection: Not available
Net Revenue 1997: Not available
Total Water Produced 1997 (gallons): Not available
Water Sold 1997 (gallons): Not available
Unaccounted-for Water 1997 (%): Not available

The Wingo Water and Sewer currently has 320 customers. It has an average daily withdrawal of 37,500 gallons from three wells. The treatment plant currently treats 150,000 gallons per day. The plant has a rated capacity of 720,000 gallons per day. The water system has a storage capacity of 175,000 from two tanks. The system currently spends 64% of its revenue on operation and maintenance.

SYMSONIA WATER DISTRICT

PWSID: 0420423
System Type: COMMUNITY
Owner Type: WATER DISTRICT
Surface Source:
Purchase Source:
Well Source: Yes
Sells Water to:
Treatment Plant Capacity (MGD): 0.15
Percent Daily Average Production: 4.00
Total Tank Storage Capacity (gallons): 75,000.00
Total Service Connections: 273.00
Number of Employees: 1.00
Treatment Operator Class:
Distribution Operator Class: 2BD
Customer Rate for 1,000 Gallons: 3.66
O/M costs 1997: 48,817.00
O/M costs per Service Connection: 178.82
Net Revenue 1997: 5,881.00
Total Water Produced 1997 (gallons): 20,640,000.00
Water Sold 1997 (gallons): 16,698,000.00
Unaccounted-for Water 1997 (%): 5.29

The district has 273 customers and has 1 fulltime employee. The district has two wells from which they withdraw 54,000 per day. The treatment plant is rated for 150,000 gallons and operates at 70% capacity. The district has one water tower with a capacity of 75,000 gallons. The district spends 80% of revenue on operation and maintenance.

SEDALIA WATER DISTRICT

PWSID: 0420534
System Type: COMMUNITY
Owner Type: WATER DISTRICT
Surface Source:
Purchase Source:
Well Source: Yes
Sells Water to:
Treatment Plant Capacity (MGD): 0.21
Percent Daily Average Production: 24.00
Total Tank Storage Capacity (gallons): 100,000.00

Total Service Connections:	150.00
Number of Employees:.....	1.00
Treatment Operator Class:	
Distribution Operator Class:	2BD
Customer Rate for 1,000 Gallons:.....	3.10
O/M costs 1997:.....	21,454.00
O/M costs per Service Connection:	143.03
Net Revenue 1997:	4,221.00
Total Water Produced 1997 (gallons):.....	12,596,000.00
Water Sold 1997 (gallons):.....	8,866,100.00
Unaccounted-for Water 1997 (%):	28.91

The Sedalia Water District currently serves 150 customers. It has one fulltime employee. The system withdraws 30,000 gallons per day from its well, and treats 30,000 gallons at its treatment plant. The storage capacity is 100,000 gallons. The system spends 68% on operation and maintenance.

CUBA WATER WORKS

PWSID:.....	0420540
System Type:.....	COMMUNITY
Owner Type:	MUNICIPAL
Surface Source:	
Purchase Source:	
Well Source:	Yes
Sells Water to:	
Treatment Plant Capacity (MGD):.....	0.040
Percent Daily Average Production:	38.00
Total Tank Storage Capacity (gallons):.....	4,000.00
Total Service Connections:	47.00
Number of Employees:.....	0.00
Treatment Operator Class:	
Distribution Operator Class:	1BD
Customer Rate for 1,000 Gallons:.....	Not available
O/M costs 1997:.....	Not available
O/M costs per Service Connection:	Not available
Net Revenue 1997:	Not available
Total Water Produced 1997 (gallons):.....	Not available
Water Sold 1997 (gallons):.....	Not available
Unaccounted-for Water 1997 (%):	Not available

The Cuba Water Works currently has 47 customers, and employs one fulltime employee. The system has two wells and has an average daily withdrawal of 7,500 gallons from each. The treatment plant has a 24-hour design capacity of 40,000 gallons and the plant currently treats 15,000 gallons per day. The system currently spends 132% of its revenues for operation and maintenance costs. The system is rated as a Class IB.

LYNNVILLE WATER SYSTEM

PWSID: 0420541
System Type: COMMUNITY
Owner Type: MUNICIPAL
Surface Source:
Purchase Source:
Well Source: Yes
Sells Water to:
Treatment Plant Capacity (MGD): 0.02
Percent Daily Average Production: 12.00
Total Tank Storage Capacity (gallons): 400.00
Total Service Connections: 20.00
Number of Employees: 1.00
Treatment Operator Class:
Distribution Operator Class: 1BD
Customer Rate for 1,000 Gallons: Not available
O/M costs 1997: Not available
O/M costs per Service Connection: Not available
Net Revenue 1997: Not available
Total Water Produced 1997 (gallons): Not available
Water Sold 1997 (gallons): Not available
Unaccounted-for Water 1997 (%): Not available

The system has 20 customers and treats 1,800 gallons a day. The municipal system has treatment capacity of 15,000 gallons per day and storage capacity of 400 gallons from two tanks. The system currently spends 62% of its revenue on operation and maintenance.

TRI CITY WATER WORKS

PWSID: 0420904
System Type: COMMUNITY
Owner Type: MUNICIPAL
Surface Source:
Purchase Source:
Well Source: Yes
Sells Water to:
Treatment Plant Capacity (MGD): 0.02
Percent Daily Average Production: 20.00
Total Tank Storage Capacity (gallons): 700.00
Total Service Connections: 30.00
Number of Employees: 0.00
Treatment Operator Class:
Distribution Operator Class: 1BD
Customer Rate for 1,000 Gallons: Not available
O/M costs 1997: Not available
O/M costs per Service Connection: Not available
Net Revenue 1997: Not available
Total Water Produced 1997 (gallons): Not available
Water Sold 1997 (gallons): Not available
Unaccounted-for Water 1997 (%): Not available

The Tri-City Water Works currently serves 30 customers. The system withdraws 4,250 gallons per day and treats 4,250 gallons per day. The municipal system has treatment capacity of 20,000 gallons per day has a combined storage capacity of 700 gallons.

OTHER SYSTEMS

CUBA GRADE SCHOOL

Cuba Grade School is located in Graves County. The system serves a population of 159 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 25,000 gallons per day. The water source is wells.

SEABOARD FARMS OF KY, INC.

Seaboard Farms Of Ky, Inc. is located in Graves County. The system serves a population of 800 and has 1 service connection. The private, non-transient, non-community system has treatment capacity of 1,500,000. The water source is wells.

PRIVATE DOMESTIC SYSTEMS

About 10,500 people in Graves County rely on private domestic wells for their water supply.

Abundant quantities of ground-water is available for domestic, irrigation, and industrial uses in Graves County from depths of a few feet to below 700 feet with most wells set at the 100 foot range. A few wells obtain shallow perched water from gravel or alluvial deposits but these zones often will not yield sufficient water for an adequate domestic supply due to periods of low rainfall, which is common in late summer and fall. In general, the chemical quality of the water is good, but water from some aquifers contains objectionable amounts of iron and manganese. Water from alluvium is generally hard to very hard with moderate to high levels of dissolved solids. Water from the sand and/or gravel, non-alluvium aquifers are considered soft and slightly acidic with low dissolved solids. Yields in some of the deeper wells (250-1,500 feet) are greater than 1,000 gallons per minute which is sufficient for a community or industrial supply.

Water quality generally is good except in areas where downward percolation of surface water and fluids from domestic sewage-disposal systems, and other sources of domestic or industrial pollution have contaminated the aquifer. In a few wells harmful amounts of nitrate have

been detected. Ground water sometimes contains iron naturally in objectionable amounts from the deeper zones. In some formations with slightly acidic ground-water, a chemical reaction between the acidic ground-water and steel well casing and pump equipment will produce a high iron content in the water which is not naturally occurring.
